

CLAIMS

What is claimed is:

1. A method for detecting gabapentinoid activity in a compound comprising the steps of:
5 introducing into host cells a heterologous DNA sequence that encodes a reporter polypeptide in response to Erk-2 activation;
separating the host cells into at least two groups, a first group and a second group;
treating the first group of host cells with a target compound;
10 treating the first group and second group of host cells with an Erk-2 agonist;
determining reported polypeptide activity in the first group and in the second group; and
comparing reporter polypeptide activity from the first group to the second group.
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2. The method of Claim 1, wherein the host cells are Chinese hamster ovary (CHO) cells.
3. The method of Claim 1, wherein the heterologous DNA sequence encodes luciferase.
- 20 4. The method of Claim 1, wherein the Erk-2 agonist is quisqualate.
5. The method of Claim 1, wherein in the Erk-2 agonist is substance P.
6. The method of Claim 1, wherein the separating step comprises the step of separating the host cells into a plurality of groups, and the compound treating step comprises treating each separate group with a compound
25 having a final concentration of between 1 μ M and 1 mM.

7. The method of Claim 1, further comprising host cells that express the NK1 receptor.
8. The method of Claim 1, further comprising host cells that express mGluR1.
- 5 9. The method of Claim 1, further comprising host cells that express mGluR5.
- 10 10. The method of Claim 1, wherein the treating with the Erk-2 agonist step occurs prior to the treating with the gabapentinoid step.
11. A method for analyzing the activity of gabapentinoids in host cells comprising the steps of:
10 engineering the host cells to express NK-1 receptor;
treating the host cells with an analog or derivative of gabapentin;
treating the host cells with a NK1 agonist; and
analyzing Erk-2 activity in the host cells, wherein the Erk-2 activity is
15 compared to control cells treated only with the Erk-2 agonist, and
determining compounds that have gabapentinoid activity.
12. A method for analyzing the activity of gabapentinoids in host cells comprising the steps of:
20 engineering the host cells to express mGluR5;
treating the host cells with a gabapentinoid;
treating the host cells with a mGluR5 agonist; and
analyzing Erk-2 activity in the host cells wherein the Erk-2 activity is compared to control cells treated only with the Erk-2 agonist.
13. The method of Claim 11, wherein the analyzing Erk-2 step is performed
25 by Western blotting for pErk-2.

14. A method for treating neuropathic pain in a subject comprising:
screening a gabapentinoid for gabapentin activity; and
administering the gabapentinoid to the subject.
- 5 15. A method for treating central nervous disorders in a subject comprising:
screening a gabapentinoid for gabapentin activity; and
administering the gabapentinoid to the subject.
16. A kit for performing an in vitro assay to detect gabapentinoid activity in a
compound comprising: a cell line genetically engineered to over-express
the NK-1 receptor.
- 10 17. The kit of Claim 15, wherein the genetically engineered cell line further
contains a MAP kinase inducible reporter construct.
18. A kit for performing an in vitro assay to detect gabapentinoid activity in a
compound comprising: a cell line genetically engineered to over-express
the mGluR5 receptor.